

# NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

## FACT SHEET

(pursuant to NAC 445A.236)

**Permittee Name:** Nevada Cogeneration Associates  
420 N. Nellis Boulevard  
# A3-117  
Las Vegas, NV 89110

**Permit Numbers:** NEV90049

**Locations:** Nevada Cogeneration Associates #1 (NCA #1)  
Garnet Valley Cogeneration Plant, Clark County  
Latitude: 36° 20' 34"N, Longitude: 114° 55' 20"W  
Township 18S, Range 63E, Section 34

**Drinking Water Protection Area / Wellhead Protection Area:** The Nevada Cogeneration Associates (NCA) Garnet Valley Cogeneration Plant is located within the 3000' but outside the 1000' Drinking Water Protection Areas (DWPA) of the Georgia Pacific Corporation water well. The facility is not within an established Wellhead Protection Area (WHPA). The Garnet Valley Cogeneration plant evaporation pond is double lined, and meets the recognized Nevada standards for a zero-discharge facility.

**General:** Nevada Cogeneration Associates (NCA) operates the Garnet Valley Cogeneration Plant in Clark County. The Garnet Valley plant is located approximately sixteen miles northeast of downtown Las Vegas on U.S. I-15/93. The plant is rated at 85 megawatts (MW) of electrical generating capacity. At the facility, natural gas fires three combustion turbines, and waste heat is recovered in a steam generator. The principal products supplied by the plant are electricity to Nevada Power Corporation and thermal energy (heat) to the adjacent Georgia-Pacific Plant, which manufactures gypsum wallboard (sheet rock). Surplus thermal heat from the Garnet Valley cogeneration turbines is used to calcine gypsum ore and dry wallboard product. The cogeneration plant provides the electrical demand of 60,000 homes in Clark County.

The Garnet Valley plant uses a double-lined evaporation pond to contain all process fluids generated from the facility; stormwater and sanitary wastes are handled separately. The evaporation pond is designed to evaporate 31.4 gallons per minute (gpm) (3.93 gpm/acre, based on net evaporation rate of 68.2 inches/year). The waste stream is comprised of cooling tower blowdown, boiler makeup water system spent regenerates, plant washdown water, and equipment drain sources. The facility uses an eight-acre evaporation pond, which is lined with 36-mil Hypalon® (primary) and 30-mil PVC (secondary) synthetic liner materials. Leakage from the primary liner is collected and routed to a leak detection sump, where the leakage flow rate is measured. The pond was originally designed to be outfitted with centrally located mister nozzles to increase the evaporation rate; however, these sprays have not been installed. The maximum operating depth in the ponds is specified as 5 ft. in the center, and the minimum freeboard height is specified as 2 ft. The evaporation process concentrates the discharged salts (brine sludges), which are periodically removed for disposal to the Republic Apex Landfill.

In the past, the cogeneration plant has provided dust suppression water from the evaporation ponds

to neighboring mineral processing facilities. The dust suppression water has been used on haul roads and in mineral crushing equipment (water sprays). According to NCA, these neighboring facilities are Chemical Lime and Western Mining and Materials. With the 2007 renewal of this permit, use of water pumped from the evaporation ponds for dust control shall be discontinued, due to the high salt content of the pond water (100,000 to 150,000 mg/l Total Dissolved Solids). Wastewater from the plant itself prior to discharge to the evaporation pond contains less than 60,000 mg/l Total Dissolved Solids, and may be used for dust suppression purposed.

All process water for the Garnet Valley facility is supplied from three common supply wells located mid-way between the facility and its sister plant, NCA Black Mountain Cogeneration plant, which is administered under permit NEV90050. The screened depth of the supply wells is reported as 600 feet below ground surface (bgs). The design supply rate of water to the Garnet Valley facility is 550 gpm. The bulk of the water supply is evaporated in the cooling towers and evaporation ponds. Approximately 100 gpm of raw water from the facility is exported to the neighboring wallboard plant as process make-up water.

**Flow and Effluent Characteristics:** During the period from July 2002 through March 2007, the Garnet Valley facility reported the following monitoring and analytical results:

Parameter		Permit Limit	Average	Maximum	Minimum
Daily Flow to Pond (MGD)		0.249	0.047	0.077	0.030
Allowable Leakage Rate (gal/acre/day)		40	178	4,557	0
Pond Fluid Pumped for Dust Control (gallons/month) <sup>(1)</sup>		M&R	101,429	252,000	6,000
Total Dissolved Solids (mg/l)		M&R	130,837	240,000	67,000
pH (Standard Units)		M&R	9.02	9.64	8.55
Trace Metals <sup>(2)</sup>					
	Antimony (mg/l)	M&R	0.012	0.025	<0.006
	Arsenic (mg/l)	M&R	0.050	0.16	<0.025
	Beryllium (mg/l)	M&R	0.003	0.006	<0.002
	Cadmium (mg/l)	M&R	0.005	0.01	<0.0025
	Chromium (mg/l)	M&R	0.006	0.0125	<0.005
	Copper (mg/l)	M&R	0.015	0.039	<0.01
	Lead (mg/l)	M&R	0.038	0.13	<0.01
	Mercury (mg/l)	M&R	0.00027	0.001	<0.0002
	Nickel (mg/l)	M&R	0.058	0.23	<0.02
	Selenium (mg/l)	M&R	0.025	0.06	<0.02
	Silver (mg/l)	M&R	0.020	0.075	<0.005
	Thallium (mg/l)	M&R	0.549	3.6	<0.01
	Zinc (mg/l)	M&R	0.054	0.125	<0.05

(1). Data from January-July, 2007.

(2). All calculations made with non-detect results assumed at half the detection limit.

The facility has maintained the required zero-discharge standard of performance. The facility has had significant leakage through the primary liner during the period in question, but fluid was contained within and recovered from the secondary liner. The facility underwent an aggressive liner repair program in the second quarter of 2006, and leakage rates have been within permit limits since that time. Average leakage rate since September 2006 has been 19.9 gallons/acre/day.

**Receiving Water Characteristics:** The pond is designed to function under zero-discharge conditions, and has a double-liner containment system. Wastewater is removed from the system via evaporation. Based on Division of Water Resources well log data for the well nearest the Garnet Valley plant (Georgia-Pacific), the static groundwater level was determined to be 600 ft. bgs at this location. Groundwater movement is expected to be in a south-southeast direction towards the Las Vegas Wash and Lake Mead.

**Rationale for Permit Requirements:** The Division's rationale for the proposed monitoring conditions is as follows:

- *Flow:* Influent flow to the evaporation pond is monitored via flow meters. In addition, the volume of dust control water supplied from the pond is monitored. This ensures appropriate fluid level in the pond.
- *TDS:* The pond contents and the fluid disbursed for dust control purposes are sampled quarterly for Total Dissolved Solids (TDS). This parameter is monitored to assess the appropriateness of pond inflow fluid use for dust control, and to gain information on pond supernatant quality should a catastrophic leak in the liner system occur
- *pH:* The pond contents and the fluid disbursed for dust control purposes are sampled quarterly for pH. This parameter is monitored to assess the appropriateness of pond inflow fluid use for dust control, and to gain information on pond supernatant quality should a catastrophic leak in the liner system occur
- *Metals:* The pond contents and the fluid disbursed for dust control purposes are sampled semi-annually for thirteen priority pollutant metals (i.e., Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Tl and Zn). These parameters are monitored to assess the appropriateness of pond inflow fluid use for dust control, and to gain information on pond supernatant quality should a catastrophic leak in the liner system occur
- *Leak Detection Sump:* On a monthly basis, the pond sump is pumped and totalized. This will allow the Permittee and the Division to determine if excess leakage is present, and ensures that appropriate liner repairs are made on a timely basis.

**Proposed Effluent Limitations and Special Conditions:**

Proposed permit limits and monitoring requirements for the Garnet Valley facility are the following:

**Table 1: Plant Discharge Limitations**

PARAMETER		DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
		30-Day Average	Daily Maximum	Measurement Frequency	Sample Type
Pond Inflow, MGD (Outfall 001)		Monitor & Report	0.249 <sup>(1)</sup>	Continuous	Flow Meter
Wastewater Diverted for Dust Control, gallons (Outfall 002)		Monitor & Report		Continuous	Volumetric Determination
Leak Detection Sump Inspection (gal/day)		Monitor, Evacuate, Calculate & Report Maximum allowable leakage is 320 gallons/day (40 gal/day/acre)		Weekly	Flow Meter
Pond Supernatant and Water Diverted for Dust Control, Each	TDS, mg/L	Monitor & Report		Quarterly	Composite <sup>(2)</sup>
	pH, S.U.	Monitor & Report		Quarterly	Composite <sup>(2)</sup>
	Metals, mg/L <sup>(3)</sup>	Monitor & Report		Semi-Annually (1 <sup>st</sup> & 3 <sup>rd</sup> Quarters) <sup>(4)</sup>	Composite <sup>(2)</sup>

- (1). Pond inflow shall not exceed the evaporation capacity.
- (2). A composite sample shall be obtained by combining equal volumes of liquid taken from each corner of the evaporation pond.
- (3). Metals to be tested are Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Tl and Zn.
- (4). Sampled in January and July of each year.

**Schedule of Compliance:** The Permittee shall implement and comply with the provisions of the schedule of compliance after approval by the Administrator, including in said implementation and compliance, any additions or modifications, which the Administrator may make in approving the schedule of compliance. The Permittee shall achieve compliance with all conditions of this permit upon issuance. Additionally, the Permittee shall submit the following items to the Division for review and approval (all compliance deliverables shall be sent to the attention of the **Compliance Coordinator**, Bureau of Water Pollution Control):

1. **By MMM DD, 2007**, the Permittee shall submit an updated list and map indicating the facilities being supplied dust control water from the Garnet Valley facility.
2. **By MMM DD, 2007**, the Permittee shall submit drawings of the dust control fluid load-out.
3. **By MMM DD, 2007**, the Permittee shall submit a detailed plan for monitoring of fluid disbursed for dust control purposes.

**Procedures for Public Comment:** The Notice of the Division's intent to issue (renew) the zero-discharge permits #NEV90049 to NCA, authorizing the operation of the zero-discharge evaporation pond, subject to the conditions contained within the permit, is being sent to the **Las Vegas Review-**

**Journal** for publication. The notice is being mailed to interested persons on our mailing list. Anyone wishing to comment on the proposed permit can do so in writing for a period of thirty (30) days following the date of publication of the public notice in the newspaper. The comment period can be extended at the discretion of the Administrator. The deadline date and time by which all comments are to be submitted (via postmarked mail or time-stamped faxes, e-mails, or hand-delivered items) to the Division is **December 5, 2007 by 5:00 P.M.**

A public hearing on the proposed determination can be requested by the applicant, any affected State, any affected interstate agency, the Regional Administrator or any interested agency, person or group of persons.

The request must be filed within the comment period and must indicate the interest of the person filing the request and the reasons why a hearing is warranted.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determines to be appropriate. All public hearings must be conducted in accordance with NAC 445A.238.

The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to NRS 445A.605.

**Proposed Determination:** The Division has made the tentative determination to issue (renew) the proposed discharge permit #NEV90049 for a period of five (5) years.

Prepared by: Janine O. Hartley  
Staff Engineer II  
Bureau of Water Pollution Control  
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